

AMENDMENTS TO THE CLAIMS

1. (Cancelled)
2. (Currently amended) A system for wirelessly exchanging communications with at least one mobile unit, the system comprising: ~~The system of claim 1, further comprising~~ a first base station unit coupled to a network; a second base station unit coupled to the network, wherein the first and second base station units are configured to communicate wirelessly with the mobile unit under a Bluetooth protocol; wherein the first and second base station units are further configured for:
 - at the first base station unit, receiving a communication from the mobile unit;
 - at the first base station unit, requesting a unique session address for the mobile unit, wherein the unique address is associated with a unique Bluetooth Device Address ("BD ADDR");
 - at the first base station unit, establishing a communications link with the mobile unit, wherein the communications link includes link context data associated with the mobile unit, and wherein the link context data associated with the mobile unit is identified at least in part based on the unique address;
 - determining that the mobile unit is to be handed-off to the second base station unit;
 - at the first base station unit, handing off to the second base station unit the communications link and link context associated with the mobile unit;

a system controller coupled to the first and second base station units and to the network, wherein the system controller includes a Dynamic Host

Configuration Protocol ("DHCP") server, wherein requesting a unique session address includes:

at the system controller, receiving the request,

generating a locally unique Internet Protocol ("IP") address via the DHCP server,

mapping the generated IP address to the unique BD_ADDR, wherein the unique BD_ADDR is a six byte value, and wherein mapping includes generating a lower three bytes of the six bytes of the unique BD_ADDR based on the generated IP address, and

forwarding to the first base station unit the unique BD_ADDR;

wherein the first and second base station units include:

upper and lower Bluetooth protocol stacks,

a mobility protocol to perform generic mobility link establishing and link clearing, wherein the mobility protocol is configured to operate above a Host Controller Interface ("HCI") under the Bluetooth protocol,

a mobility management entity, configured to operate above the HCI, for providing a protocol independent interface between the mobility protocol and the upper layers of the Bluetooth protocol stack, wherein the upper layers operate above the HCI, and

a mobility process, configured to operate below the HCI, for interfacing between the mobility management entity and the lower layers of the Bluetooth protocol stack, wherein the lower layers operate below the HCI;

wherein the second base station is configured to determine that the communication link with the mobile unit is lost or cleared and provide a message to the system controller, and

wherein the system controller releases the unique BD_ADDR in response to the received message.

3. (Currently amended) A system for wirelessly exchanging communications with at least one mobile unit, the system comprising:~~The system of claim 1, further comprising~~
a first base station unit coupled to a network;
a second base station unit coupled to the network, wherein the first and second base station units are configured to communicate wirelessly with the mobile unit under a Bluetooth protocol;
wherein the first and second base station units are further configured for:
at the first base station unit, receiving a communication from the mobile unit;
at the first base station unit, requesting a unique session address for the mobile unit, wherein the unique address is associated with a unique Bluetooth Device Address ("BD_ADDR");
at the first base station unit, establishing a communications link with the mobile unit, wherein the communications link includes link context data associated with the mobile unit, and wherein the link context data associated with the mobile unit is identified at least in part based on the unique address;
determining that the mobile unit is to be handed-off to the second base station unit;
at the first base station unit, handing off to the second base station unit the communications link and link context associated with the mobile unit;
 a system controller coupled to the first and second base station units and to the network, wherein the first and second base station units include a radio environment management entity and a mobility protocol, and wherein at least the first base station unit is further configured for:
 monitoring a quality of the communications link with mobile unit;

at the radio environment management entity, determining that the quality of the communications link has dropped below a threshold and generating a handoff request message;

at the mobility protocol, receiving the handoff request message, sending a suspend message to the system controller to suspend transmissions for the mobile unit, and sending a handoff acceptance inquiry message to the mobility protocol of the second base station unit;

receiving a response from the second base station unit;

forwarding the link context data to the second base station unit

exchanging primitives between the mobility protocol and the mobility management entity to clear the communications link at the first base station unit;

at the mobility protocol, sending a link cleared message to the radio environment management entity; and

at the mobility protocol, sending a resume data transmissions message to the system controller, wherein, in response thereto, the system controller sends data for the mobile unit to the second base station unit.

4. (Currently amended) In a network, a method for wirelessly exchanging communications with at least one mobile unit, wherein the network includes first and second base stations units coupled to the network, the method comprising:

at the first base station unit, receiving a wireless communication from the mobile unit, wherein the wireless communication is under a wireless communications protocol, wherein the wireless communications protocol does not provide for handoff of communications links between base station units;

at the first base station unit, obtaining a unique session identifier for the communication with the mobile unit;

at the first base station unit, establishing a communications link with the mobile unit, wherein the communications link includes link context data associated with the mobile unit, and wherein the link context data associated with the mobile unit is identified at least in part based on the unique session identifier;

determining that the mobile unit is to be handed-off to the second base station unit; and

handing off to the second base station unit the communications link and link context associated with the mobile unit, wherein the handing off is performed without assistance of the mobile unit; and

wherein the unique session identifier is a virtual Bluetooth device address having a six byte value, and wherein a lower three bytes of the six bytes of the unique BD ADDR are generated by the first base station unit or the network and the three bytes fall within a range that is less than a total range available under the three bytes.

5. (Original) The method of claim 4 wherein the first and second base station units are both Bluetooth enabled base station units that employ upper and lower Bluetooth protocol stacks, wherein the unique session identifier is a unique Bluetooth Device Address ("BD_ADDR"), and wherein the first and second base station units include:

a mobility protocol to perform generic mobility link establishing and link clearing, wherein the mobility protocol is configured to operate above a Host Controller Interface ("HCI") under the Bluetooth protocol,

a mobility management entity, configured to operate above the HCI, for providing a protocol independent interface between the mobility protocol and the upper layers of the Bluetooth protocol stack, wherein the upper layers operate above the HCI, and

a mobility process, configured to operate below the HCI, for interfacing between the mobility management entity and the lower layers of the Bluetooth protocol stack, wherein the lower layers operate below the HCI.

6. (Original) The method of claim 4 wherein receiving a wireless communication from the mobile unit includes receiving communication signals under a Bluetooth protocol from the mobile unit.
7. (Original) The method of claim 4 wherein the unique session identifier is a virtual Bluetooth device address.
8. (Original) The method of claim 4, further comprising a system controller coupled to the first and second base station units and to the network, wherein the system controller includes a Dynamic Host Configuration Protocol ("DHCP") server, and wherein obtaining a unique session identifier includes:
 - at the system controller, receiving a request from the first base station unit,
 - generating a locally unique Internet Protocol ("IP") address via the DHCP server,
 - mapping the generated IP address to a unique BD_ADDR, wherein the unique BD_ADDR is a six byte value, and wherein mapping includes generating a lower three bytes of the six bytes of the unique BD_ADDR based on the generated IP address, and
 - forwarding to the first base station unit the unique BD_ADDR.
9. (Original) The method of claim 4 wherein the first base station unit or the network includes a Dynamic Host Configuration Protocol ("DHCP") function, and wherein obtaining a unique session identifier includes:
 - generating a locally unique Internet Protocol ("IP") address via the DHCP function, and
 - mapping the generated IP address to the unique session identifier.
10. (Cancelled)

11. (Currently amended) In a network, a method for wirelessly exchanging communications with at least one mobile unit, wherein the network includes first and second base stations units coupled to the network, the method comprising: The method of claim 4, further comprising
- at the first base station unit, receiving a wireless communication from the mobile unit, wherein the wireless communication is under a wireless communications protocol, wherein the wireless communications protocol does not provide for handoff of communications links between base station units;
 - at the first base station unit, obtaining a unique session identifier for the communication with the mobile unit;
 - at the first base station unit, establishing a communications link with the mobile unit, wherein the communications link includes link context data associated with the mobile unit, and wherein the link context data associated with the mobile unit is identified at least in part based on the unique session identifier;
 - determining that the mobile unit is to be handed-off to the second base station unit;
 - handing off to the second base station unit the communications link and link context associated with the mobile unit, wherein the handing off is performed without assistance of the mobile unit; and
- a system controller coupled to the first and second base station units and to the network,
- wherein the second base station is configured to determine that the communication link with the mobile unit is lost or cleared and provide a message to the system controller, and
- wherein the system controller releases the unique session identifier for future use in response to the received message.

12. (Currently amended) The method of claim 11 4, further comprising generating a set of unique session identifiers before receiving the wireless communication from the mobile unit or other mobile units, wherein generating comprises:
 - at each base station unit in the network, locally generating at least one proposed identifier value;
 - transmitting the proposed value to base station units in the network;
 - determining whether any other base station units have generated an identical identifier value; and
 - if not, then storing the proposed value for use as the unique session identifier.
13. (Currently amended) The method of claim 11 4, further comprising a system controller coupled to the first and second base station units and to the network, and wherein determining that the mobile unit is to be handed-off and handing off to the second base station unit includes:
 - monitoring a quality of the communications link with mobile unit;
 - determining that the quality of the communications link has dropped below a threshold;
 - sending a suspend message to the system controller to suspend transmissions for the mobile unit, and sending a handoff acceptance inquiry message to the second base station unit;
 - receiving a response from the second base station unit;
 - forwarding the link context data to the second base station unit;
 - clearing the communications link at the first base station unit; and
 - sending a resume data transmissions message to the system controller, wherein, in response thereto, the system controller sends data for the mobile unit to the second base station unit.
14. (Currently amended) The method of claim 11 4—wherein determining that the mobile unit is to be handed-off and handing off to the second base station unit includes:

determining that a quality of the communications link has dropped below a threshold;
sending a handoff acceptance inquiry message to the second base station unit;
receiving a response from the second base station unit;
forwarding the link context data to the second base station unit; and
clearing the communications link at the first base station unit.

15. (Currently amended) The method of claim 11 4—wherein the first and second base station units are stationary relative to a moving vehicle.

16. (Currently amended) The method of claim 11 4—wherein the first and second base station units are stationary.

17. (Currently amended) The method of claim 11 4—wherein the unique session identifier is a active member address value selected under the Bluetooth protocol.

18. (Currently amended) The method of claim 11 4—wherein the unique session identifier is a selected clock offset value from a synchronized native clock value CLKN employed by the first and second base station units.

19. (Currently amended) The method of claim 11 4, further comprising synchronizing a clock of the first base station unit with a clock of the second base station unit.

20. (Cancelled)

21. (Cancelled)

22. (Cancelled)

23. (Cancelled)

24. (Cancelled)

25. (Cancelled)

26. (Cancelled)
27. (Cancelled)
28. (Cancelled)
29. (Currently amended) In a picocellular communications network, wherein at least one mobile unit communicates with at least a portion of the network, an apparatus comprising:
- a stationary wireless network access point coupled to the picocellular communications network, wherein the access point ~~base station unit~~ includes a memory and is configured for:
 - receiving a wireless communication from the mobile unit, wherein the wireless communication is under a wireless communications protocol, and wherein the wireless communications protocol does not provide for handoff of communications links between stationary wireless network access points in the picocellular communications network;
 - obtaining a unique session identifier for the communication with the mobile unit;
 - establishing a communications link with the mobile unit, wherein the communications link includes link context data associated with the mobile unit, and wherein the link context data associated with the mobile unit is identified at least in part based on the unique session identifier;
 - determining that the mobile unit is to be handed-off to a neighboring stationary wireless network access point; and
 - handing off to the neighboring stationary wireless network access point the communications link and link context associated with the mobile

unit, wherein the handing off is performed without assistance of the mobile unit; and

wherein the link context data includes values under upper Bluetooth protocol or Internet Protocol layers above a Host Controller Interface ("HCI"), and at least one lower Bluetooth protocol layers below the HCI.

30. (Currently amended) In a picocellular communications network, wherein at least one mobile unit communicates with at least a portion of the network, an apparatus comprising: The apparatus of claim 20, further comprising:

a stationary wireless network access point coupled to the picocellular communications network, wherein the access point includes a memory and is configured for:

receiving a wireless communication from the mobile unit, wherein the wireless communication is under a wireless communications protocol, and wherein the wireless communications protocol does not provide for handoff of communications links between stationary wireless network access points in the picocellular communications network;

obtaining a unique session identifier for the communication with the mobile unit;

establishing a communications link with the mobile unit, wherein the communications link includes link context data associated with the mobile unit, and wherein the link context data associated with the mobile unit is identified at least in part based on the unique session identifier;

determining that the mobile unit is to be handed-off to a neighboring stationary wireless network access point;

handing off to the neighboring stationary wireless network access point the communications link and link context associated with the mobile unit, wherein the handing off is performed without assistance of the mobile unit;

a system controller coupled to the network access point;

a gateway router coupled to the system controller and the network access point, wherein the network access point forms at least a part of a first subnet;

a backbone router coupled to the gateway router and to the neighboring network access point, wherein the neighboring network access point forms at least a part of a second subnet; and

a point of presence coupled to the backbone router, wherein the point of presence and the mobile unit form at least part of a mobile unit virtual subnet.

31. (Currently amended) In a picocellular communications network, wherein at least one mobile unit communicates with at least a portion of the network, an apparatus comprising: The apparatus of claim 29

a stationary wireless network access point coupled to the picocellular communications network, wherein the access point includes a memory and is configured for:

receiving a wireless communication from the mobile unit, wherein the wireless communication is under a wireless communications protocol, and wherein the wireless communications protocol does not provide for handoff of communications links between stationary wireless network access points in the picocellular communications network;

obtaining a unique session identifier for the communication with the mobile unit;

establishing a communications link with the mobile unit, wherein the communications link includes link context data associated with the mobile unit, and wherein the link context data associated with the mobile unit is identified at least in part based on the unique session identifier;

determining that the mobile unit is to be handed-off to a neighboring stationary wireless network access point;

handing off to the neighboring stationary wireless network access point the communications link and link context associated with the mobile unit, wherein the handing off is performed without assistance of the mobile unit; and

wherein the unique session identifier is a virtual Bluetooth device address.

32. (Original) The apparatus of claim 29 wherein the network access point or the picocellular communications network includes a Dynamic Host Configuration Protocol ("DHCP") function, and wherein obtaining a unique session identifier includes:

generating a locally unique Internet Protocol ("IP") address via the DHCP function, and

mapping the generated IP address to the unique session identifier.

33. (Original) The apparatus of claim 29 wherein the network access point is further configured for generating a set of unique session identifiers before receiving the wireless communication from the mobile unit, wherein generating comprises:

locally generating at least one proposed identifier value;

transmitting the proposed value to other network access points in the picocellular communications network;

determining whether any other network access points have generated an identical identifier value; and

if not, then storing in the memory the proposed value for use as the unique session identifier.

34. (Original) The apparatus of claim 29 wherein the network access point is stationary relative to a moving vehicle.
35. (Original) The apparatus of claim 29 the unique session identifier is a active member address value selected under the Bluetooth protocol.
36. (Currently amended) The apparatus of claim 29 wherein the unique session identifier is a selected clock offset value from a synchronized native clock value CLKN employed by the first and second access points~~base station units~~.
37. (Original) The apparatus of claim 29 wherein the network access point has a clock and is configured to synchronize with a clock of the neighboring stationary wireless network access point. .
38. (Currently amended) In a picocellular communications network, wherein at least one mobile unit communicates with at least a portion of the network, an apparatus comprising: The apparatus of claim 29
a stationary wireless network access point coupled to the picocellular communications network, wherein the access point includes a memory and is configured for:
receiving a wireless communication from the mobile unit, wherein the wireless communication is under a wireless communications protocol, and wherein the wireless communications protocol does not provide for handoff of communications links between stationary wireless network access points in the picocellular communications network;
obtaining a unique session identifier for the communication with the mobile unit;
establishing a communications link with the mobile unit, wherein the communications link includes link context data associated with the mobile unit, and wherein the link context data associated with the

mobile unit is identified at least in part based on the unique session identifier;

determining that the mobile unit is to be handed-off to a neighboring stationary wireless network access point;

handing off to the neighboring stationary wireless network access point the communications link and link context associated with the mobile unit, wherein the handing off is performed without assistance of the mobile unit; and

wherein the network access point is configured to generate a first unique mobile unit ID that is associated with the session identifier, and wherein the neighboring stationary wireless network access point is configured to generate a second unique mobile unit ID that differs the first mobile unit ID, but is likewise associated with the session identifier.

39. (Cancelled)

40. (Cancelled)

41. (Cancelled)

42. (Cancelled)

43. (Cancelled)